Naval METOC Support to Mine Warfare

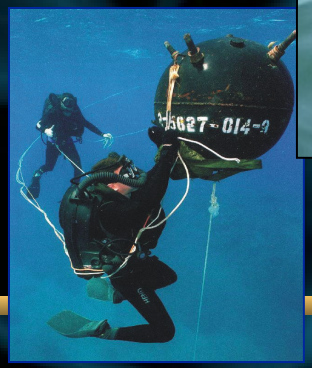
19th Mine Warfare Flag Oversight Council

NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND

RDML Tim McGee
COMNAVMETOCCOM

Agenda

- CNMOC Reorganization and Focus
- Transformation in MIW Engagement
- Through-The-Sensor
- Exercises and Warfighter Impact



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Knowledge-Centric Operational Concept

GEO-CENTRIC

AOR

Production cycle

Standard products

KNOWLEDGE -CENTRIC

Mission

Agile

Tailored

TEAM CONCEPT

- Dynamic training pipeline
- Responsive to War Fighter
- Robust reach-back capability
- Rapid Global Deployment
- Across Business Lines

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Meteorology & Oceanography Focus Areas

- Anti-Submarine Warfare
- Naval Special Warfare
- Mine Warfare
- ISR

Increase Focus

- Precise Time and Astrometry
- Navigation & SSBN Ops
- Fleet Operations/STK/EXW

Maintain Excellence

- Maritime Operations
- Aviation Operations

Increase Efficiency

METOC Forward Engagement Strategy

Objective: The Mine Warfare METOC Forward Engagement Strategy is designed to place skilled METOC officers and enlisted personnel in the field along side the Warfighter, to utilize their unique skill sets in applied environmental knowledge to make the Warfighters' mission more effective and more efficient. In addition, we will become imbedded in all phases of Mine Warfare Operations, including the FRTP. We will leverage off of our Human Capital strategy to develop highly proficient civillian and military Mine Warfare expertise.

Measures: A set of measures will be developed for each engagement node to capture their effectiveness in making the Warfighter's mission more successful. These will be monitored throughout their deployment and revaluated over an 18 month cycle. Adjustments to the forward staffing structure will be based on the Warfighter's needs.

Knowing the Warfighter…Knowing the Sensors…Knowing the Impact

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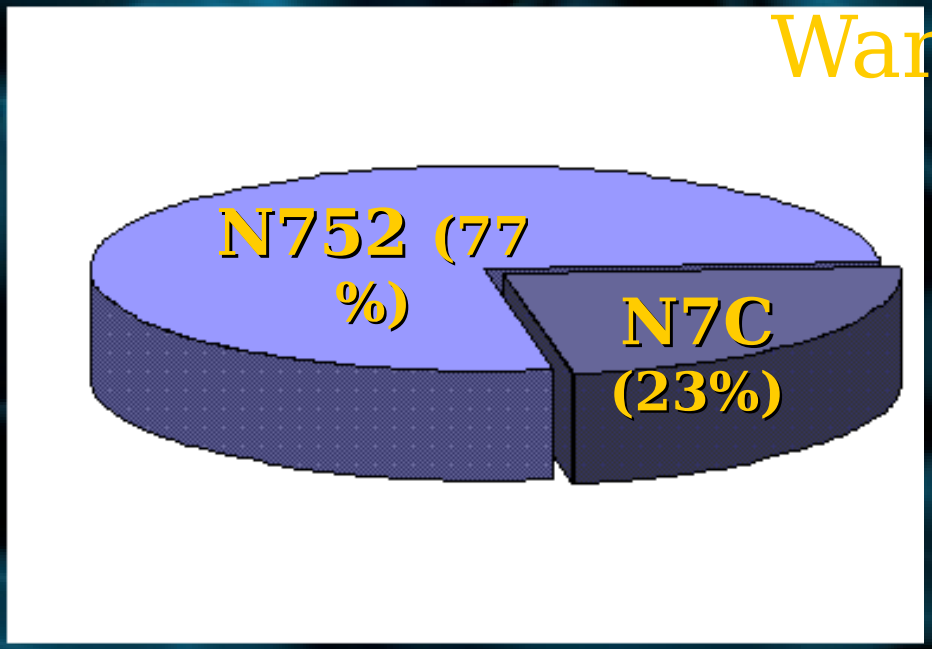
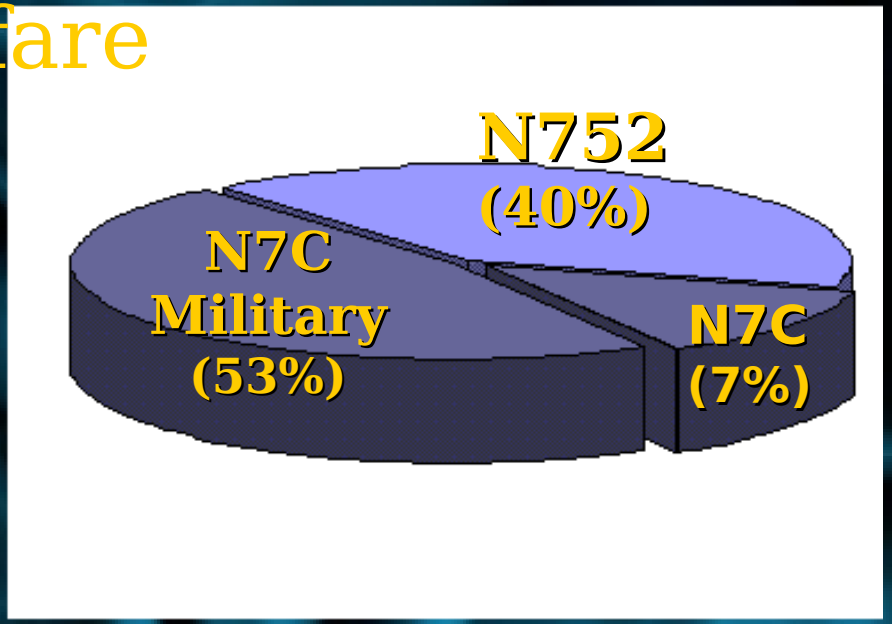
Mine Warfare METOC Human Capital

Oceanography Investment Plan in Mine Warfare



Current MIW FTE Allocation



Future MIW FTE Allocation

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MIW Focused Engagement Strategy

MCM Staff Positions

Objectives: 1. Become more operationally and tactically significant within MIWC planning, execution, evaluation of MCM fleet operations.

2. Update/incorporate further METOC MIW requirements in Tacmemo/doctrine/policy.

3. Become part of ROC/POE of MIWC (especially as MIW dedicated is relieved by organic and LCS initiatives)

4. Ensure Reachback and Forward METOC assets are integral part of MCMRON/DIV Daily Operations

5. Proficient MEDAL operators/tacticians able to summarize METOC impact (historical, route-survey, through-the-sensor, and forecasted parameters) on MOM tactics, planning, execution and evaluation

6. All tactical METOC data collected through MCMRON/DIV/HM is seamlessly returned to CMWC/NAVO for archiving into major database, passed through to other relevant mission support forces (i.e.NSW, AMPHIBIOUS, ASW, etc) in near-real-time

Measures: 1. MCM MOEs (time and risk) are more accurately collected (i.e. Change detection removed 15 contacts for further processing)

2. Operations impacted through METOC support

3. MCM Plans replanning due to METOC impact (A MCM plan is changed based on METOC input via MEDAL, Briefing, etc)

4. Data Collected (area, mission type, t[illegible] process) on site and forwarded for Archive/PB for follow-on [illegible] further warfare areas (number of hours spent processing data for proper NAVO certification for master database archive)

5. Total number of MEDAL MCM planning per month

NAVSTA Ingleside, TX

NWDC-PC
1800 (03)

COMOMAG
1800 (03)
AGC

HM-14
AGC
AG1 (7412)
AGAN

HM-15
AGC
AG1 (7412)
AGAN

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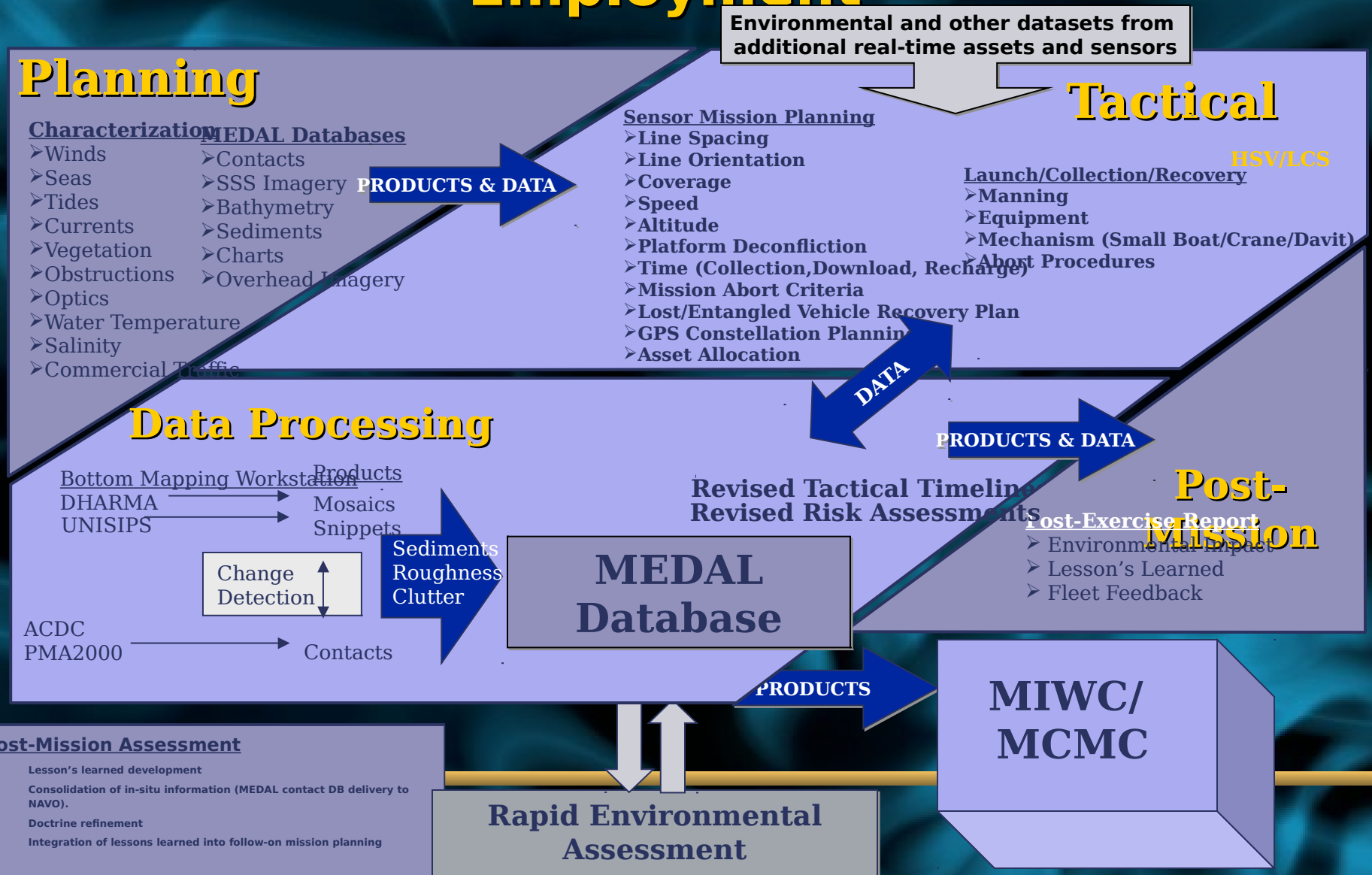
Mobile Mine Team Concept of Employment



MIW Exercise and Survey Support

- **Exercise and MIW Product Support**
  - Foal Eagle ‘05
  - Arabian Guantlet ‘05
  - Blue Game
  - Cobra Gold
  - Lead Shield (Homeland Defense Exercise)
  - GOMEX 05-2
  - Nautical Union ‘05
  - Fuerzas Aliadas Panamax
  - Ulchi Focus Lens
  - Lant/Pac JTFEX
  - AUV Fest
- **MIW Q-Route Surveys**
  - Republic of Korea Q-Routes (Continue)
  - Arabian Gulf Q-Routes

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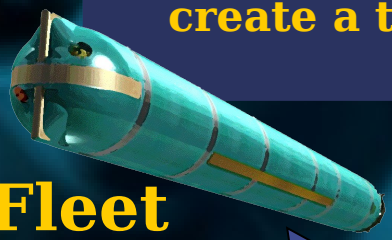
UUVs in Naval Oceanography: Overview

How are UUV's utilized in Naval Oceanography?

We exploit the tactical and non-tactical sensors to characterize the battlespace, utilize or derive the environmental knowledge to create a tactical advantage, and make the warfighter's mission more effective and more efficient.



Fleet Assets

DATA

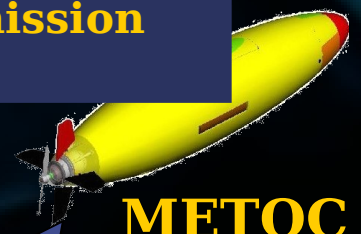
Applied Oceanographic Knowledge

Strategic EIPB

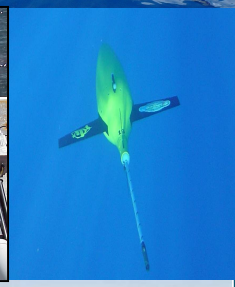
Operational EIPB

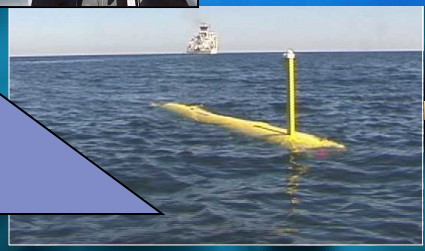
Tactical EIPB

DATA

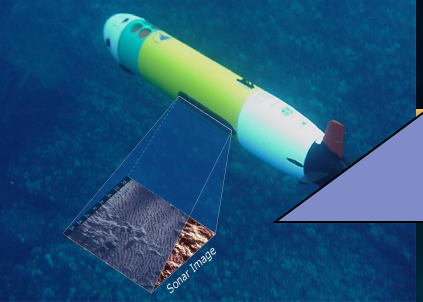


METOC Assets



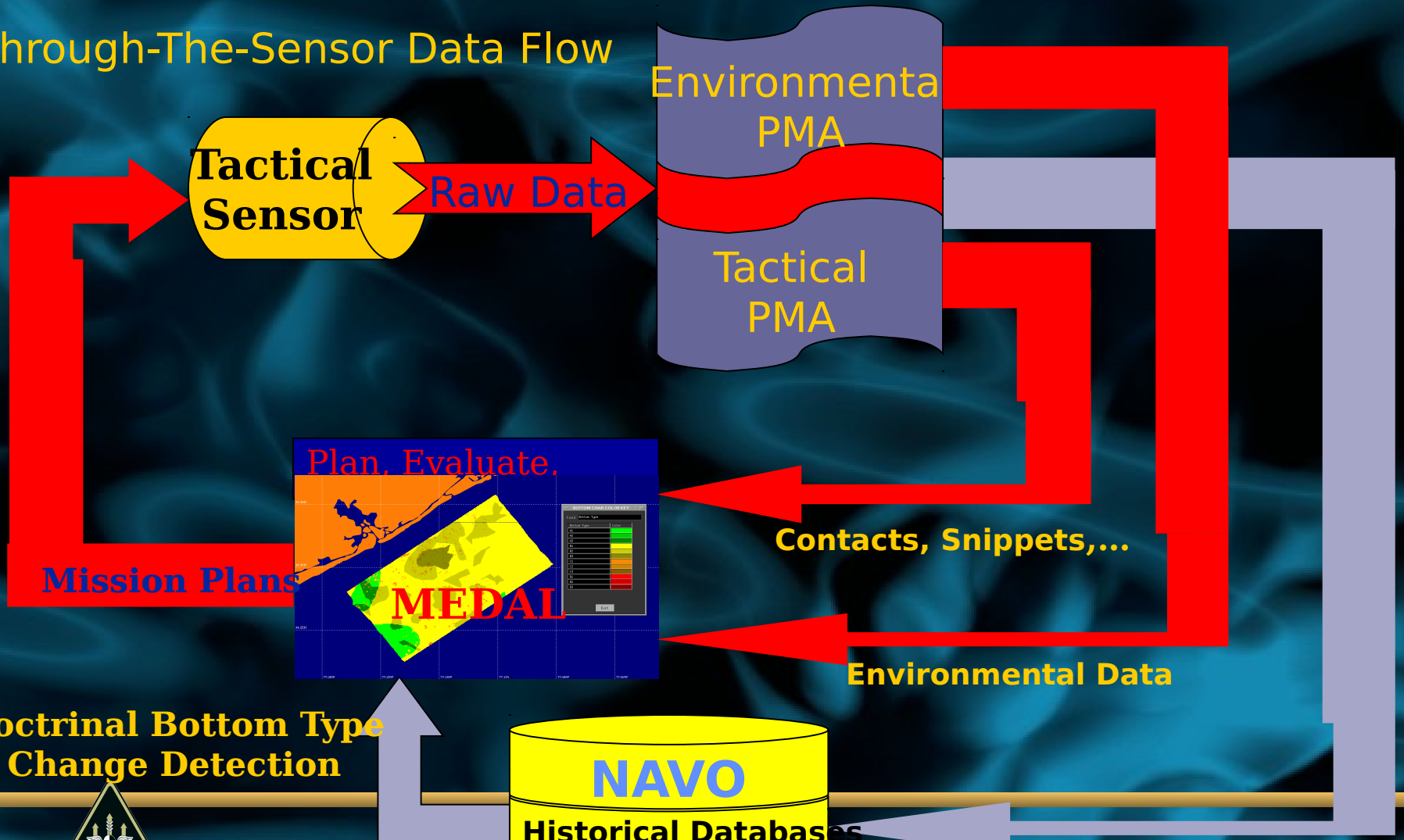


Warfighting Advantage



Tactical EIPB

Through-The-Sensor Data Flow



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Environmental Post Mission Analysis

Raw Sensor Data

METOC Parameter

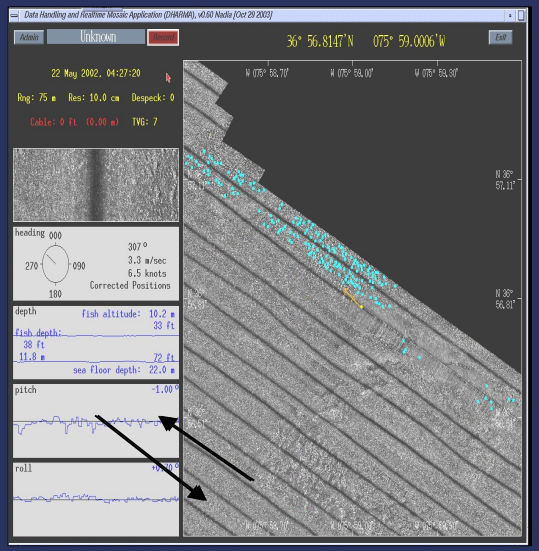
Oceanographic

Ocean Current (surface)
Ocean Current (water column)
Ocean Current (bottom)
Sea State/Sig. Wave Height
Wave Period
Wave Direction
Bottom Visibility (H)
c
Kd
Salinity
Temperature Profile
Conductivity Profile
SVP

Time-Independent

Bathymetry
Doctrinal Bottom Type
Sediment Type
Mne Burial Category
Clutter Category
Sediment Roughness

- **Multi-sensor processor**
- **Bathymetry**
- **Bottom Mosaics**
- **Bottom Sediments**
- **Automated Algorithms**
  - **Clutter Density**
  - **Bottom Roughness**
  - **Mine Burial Model**
- **Mine-Like Contacts**



UNISIPS Unified Sonar Image Processing System

DHARMA Data Handling And Real-time Mapping Algorithms

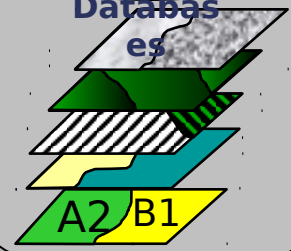
CEAS Comprehensive Environmental Analysis System

ACDC Automated Change Detection and Classification

Forecast Models (Currents, Tides, etc.) for Temporal Planning

Planning

MEDAL Databases



Q-Routes & Contacts

Smart Reachback

UUVs in Naval Oceanography: Assets & Opportunities

FY05 – FY07

Assets:

- ONR experimentation assets (BPAUV, REMUS, etc.)
- Non-POR Fleet assets (SAHRV, REMUS, etc.)
- No CONOPS, No Tail, No training

Opportunities:

- Develop and promulgate EIPB utility and CONOPS
- Influence USN Acquisitions to ensure EIPB sensors are incorporated
- Evaluate S&T sensor utility
- Develop and promulgate Naval Oceanography role in Warfighters' mission planning and operations

Manning/Skillsets

1800 AG

Planning: (Operational, Tactical)

- Mission Planning and Evaluation in MEDAL
- Development of "realistic" clearance time lines and risk.
- Nearshore Model execution and interpretation for temporal planning
- Optimum placement of MIW assets based on EIPB
- Sensor performance prediction

Tactical

- UUV mission optimization
- On-scene bottom mapping and change detection
- Sensor configuration based on T-T-S EIPB
- Asset employment recommendations based on EIPB
- Tactical and Environmental PMA

Post-Mission Assessment

- Lesson's learned development and promulgation
- Consolidation of in-situ information into COP
- MEDAL and EIPB DB delivery to NAVO
- Doctrine refinement
- Integration of EIPB and LL in follow-on mission planning

UUV Opportunities: MIW and NSW

- NSCT-1 (REMUS(8)/SCULPIN)
  - UUV Platoon 0-2, 7412
  - Marine Mammal Platoon E-4
- COMINEWARCOM (REMUS(4))
  - ONR UUV Platoon
    - AOIC O-3, 1-AGC, 2-7412's, 2 – E-4's
    - OIC O-4 (CMWC Requested)
- LCS MIW Mission Module
- NSW (SAHRV(12))
- In the future…
  - EOD
  - Naval Mobile Salvage Diving Units

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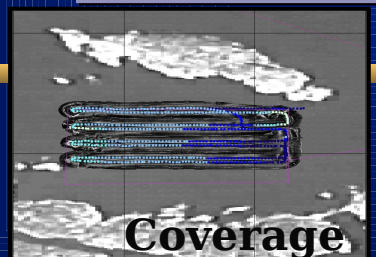
On-scene EIPB - Blue Game '04

5 REMUS Missions processed

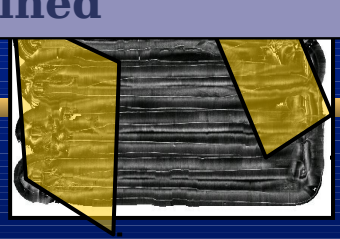
1 BPAUV Missions processed

End-to-End Process Defined

-to-End (Sensor Data to TDA)
emonstration

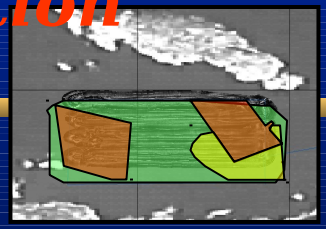


Coverage



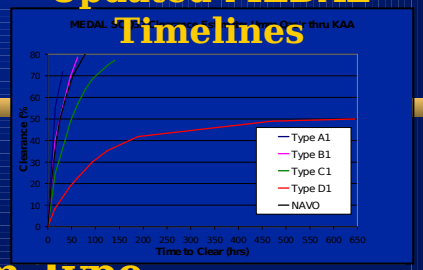
Clutter

Roughness



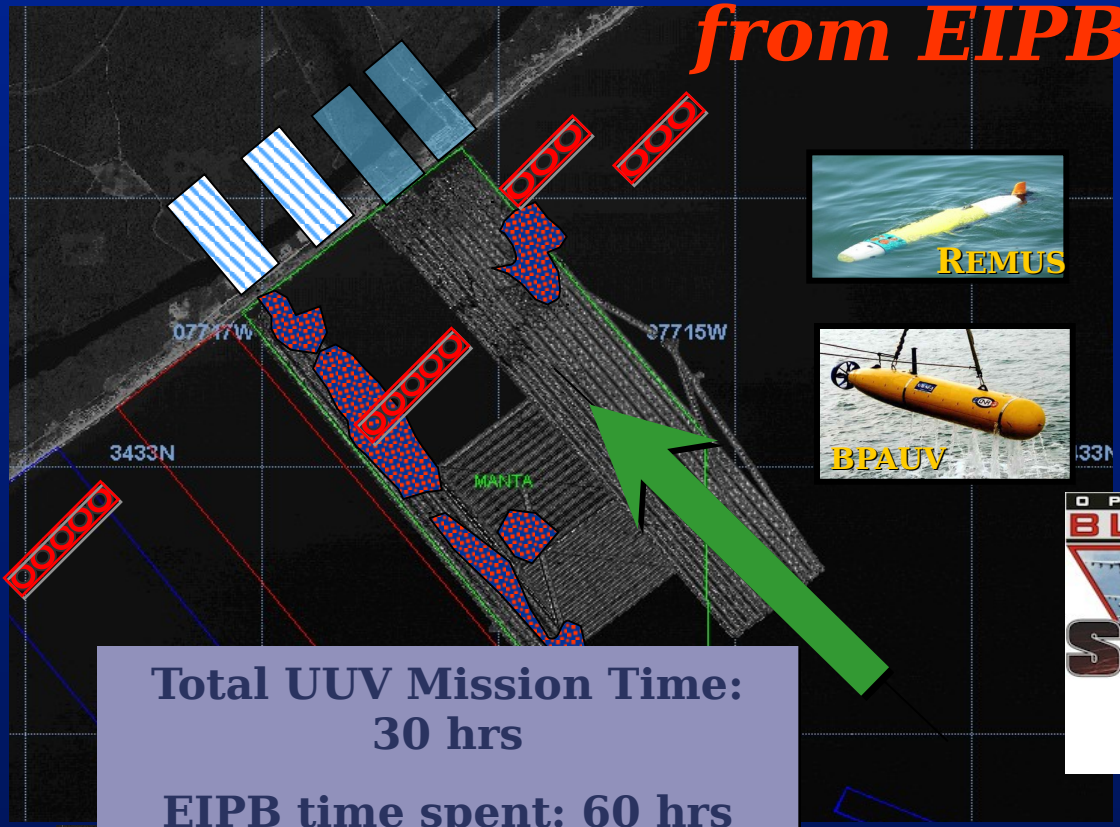
Doctrinal Bottom Type

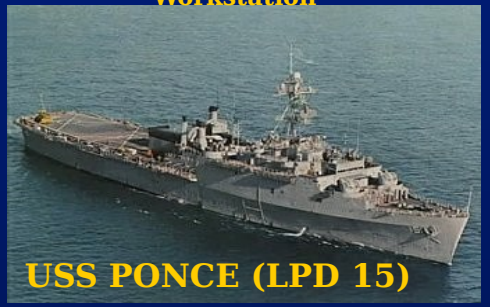
Updated MEDAL Timelines



On-Scene EIPB - CJTFEX '04

Tactical Mission Adjustment Resulting from EIPB

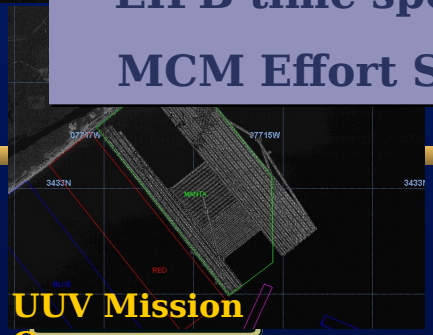




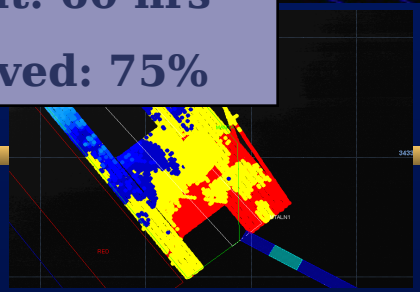
Total UUV Mission Time: 30 hrs

EIPB time spent: 60 hrs

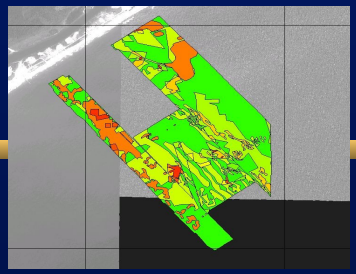
MCM Effort Saved: 75%



UUV Mission



Bathymetry



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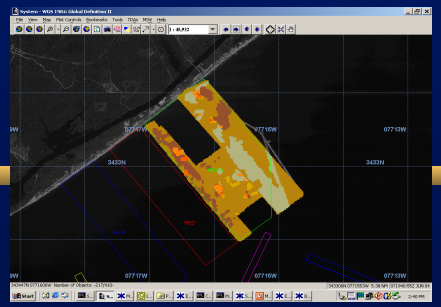

MEDAL Tactical Prod

MIW Oceanographic Operations: Summary

- Increased Commitment to MIW
- Measuring Warfare Metrics
- Responding to Warfighter Demand Signals

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Knowing the Warfighter….Knowing the Sensors…
Knowing the Impact

BACKUP SLIDES

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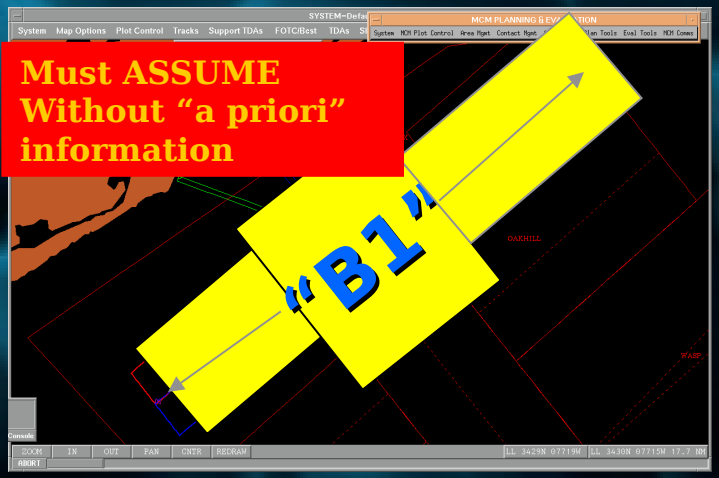
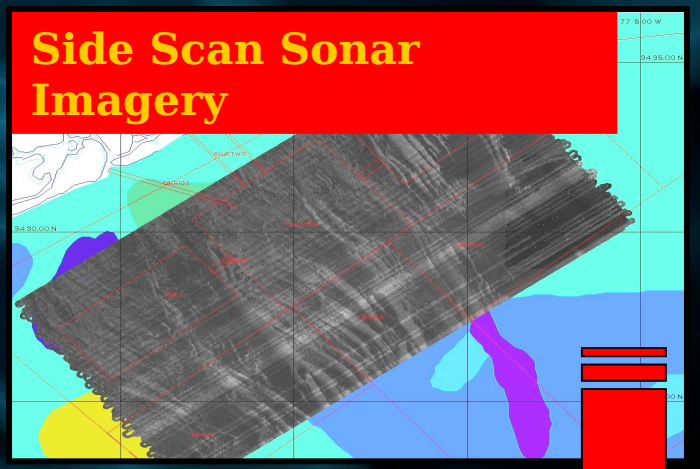
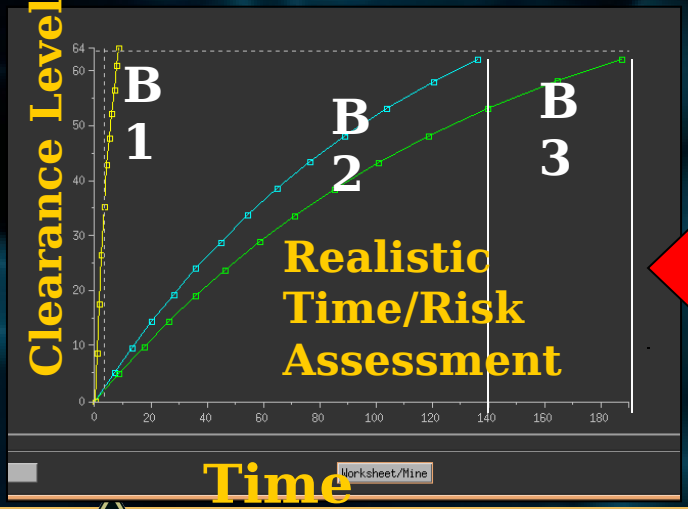
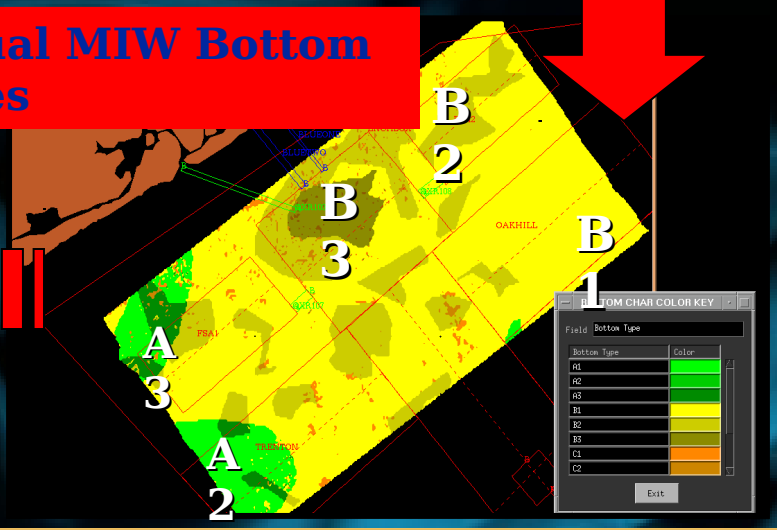
Environment Drives Tactics and Timelines



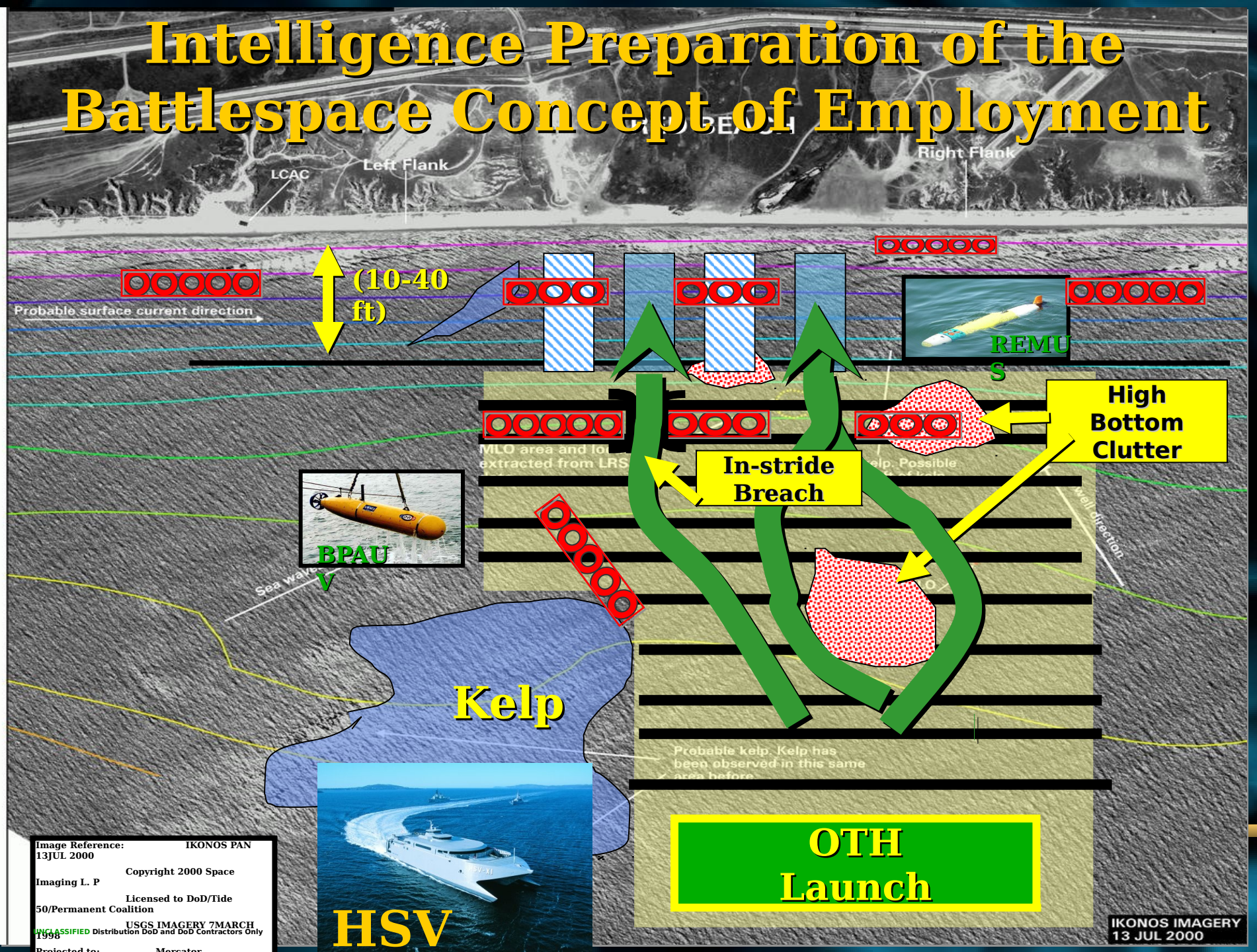






Change Detection/Accurate Characterization results in up to 45% Reduction in Clearance Timeline

Intelligence Preparation of the Battlespace Concept of Employment



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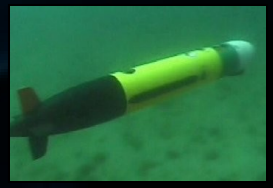
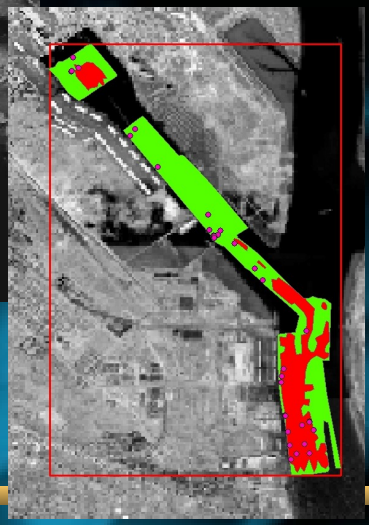
TTS SENSORS ISO IRAQI FREEDOM

- HM-15 (AQS-14)
  - Revised Bottom Type (D1 to B1/A1)
  - Soundings along KAA
- USS DEXTROUS
  - Klein 5000 (Pre-Hostilities RS)
  - Hydro-optics CTD System
  - Bottom Sediment Classifier (BSC)
  - ADCP Data
- Other Sources
  - NSCT-1 REMUS
  - UMCM Dive Reports
  - MCMREPs





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Emerging MIW Opportunities

- LMRS Dets on SSN's
  - Leveraging Surface MIW Experience
  - Proposed METOC presence on LMRS Dets
- SSGN
  - Seahorse UUV in Giant Shadow demo
  - GIANT SHADOW SITREP SERIAL 3, 21 January 2003

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